

EXHIBIT 1 - CORLISS DECLARATION

MEMORANDUM

TO: Rao Ponakala
Glenn Corliss

cc: Ihab Bishay
Karen Ferraro

FROM: Kathy Karcz/Beth Woytek

DATE: February 28, 2000

**SUBJECT: SENSORY EVALUATION REPORT FOR SS#3444(01-02) - NEOTAME VS
COMPETITIVE SWEETENERS IN PEPPERMINT CHEWING GUM -
DESCRIPTIVE PROFILE RESULTS**

STUDY DATES: 10/26,28/99
11/2,3/99

Study protocol -
Protocol for Sensory Evaluation with Ingestion of NC-00723 (Neotame) in Foods and Beverages,
IRB Protocol #2624, amended 1/21/99

Protocol Managers-
Ihab Bishay, Director, Delivery Systems and Sweet Taste, The NutraSweet Kelco Company, A unit of
Monsanto Company
Harriett Butchko, M.D., Director, Clinical Research, Worldwide Regulatory Affairs, Monsanto Company

Prepared by: Kathy Karcz

Beth Woytek

Approved by: Ihab Bishay

Sensory Study #: 3444(01-02)
Product Tested: Peppermint Chewing Gum
Test Dates: 10/26,28/99, 11/2,3/99
Panelists: Trained Mt. Prospect area consumers (n=6-7 with 2 replications)
Location: Mt. Prospect, IL
Objective: To determine the similarities and differences between peppermint chewing gums sweetened with neotame, APM, Ace-K, saccharin, sucralose (Splenda®), and sugar. The information gathered from this panel will be used in future phases of sweetener blend project in chewing gum and also to provide information for upcoming customer presentations.
Samples:
1) 100 ppm Neotame (NTM Lot #96NK008-8)
2) 3000 ppm Aspartame (APM)
3) 3200 ppm Acesulfame-K (Ace-K)
4) 1000 ppm Saccharin
5) 600 ppm Sucralose (using bulk Splenda®)
6) 47.5% Sugar
Test Method: Descriptive Flavor Profile
Trained Mt. Prospect area consumers, n=7-8

The sensory profiling of the nine chewing gum prototypes was carried out using the Spectrum Method¹ of Descriptive Analysis. This method employs extensive sensory training to familiarize the panel with a product category, exposing the panelists to flavor attributes of the category as well as conducting in-depth practice sessions in the use of a fifteen point scale for describing intensity differences. The scale enables the trained panelists to indicate the sensory intensity of each flavor or texture attribute in a universal context, where 0 indicates "none" of the attribute present, 2 approximates "trace/threshold" intensities, 5 "slight or low" level, 7.5 "moderate" intensity, 10 "strong" and 15 "extreme".

Prior to evaluating the test samples, the panelists were presented with flavor and basic taste references to familiarize themselves with the different descriptors. Panelists evaluated the chewing gum over twenty minutes. To minimize fatigue, the six test samples were evaluated over two sessions, three samples presented during each session. Over the two sessions, the samples were presented to the panelists in a balanced order, unwrapped, in 2 ounce plastic cups randomly coded with three-digit numbers. Samples were assessed in duplicate. Panelists had a 10 minute break between each sample to minimize carry-over effects. Still water, crackers and unsweetened applesauce were available as palate cleansers before and between samples.

Data analysis

Attribute scores were averaged across panelists. An analysis of variance (ANOVA) was performed on the data. Visual comparisons of sensory characteristics were drawn by spider plots/star diagrams.

¹ Reference: Meilgaard, M., Civille, G., Carr, B.T., Sensory Evaluation Techniques, CRC Press: Boca Raton, FL 1987; pp.119-141.

Key Findings:

Based on the results of this descriptive profile sensory study, neotame sweetened gum offers benefits of maintaining a significant level of sweetness and slight minty flavor after 20 minutes of chew time as compared to gums sweetened with APM, Ace-K, saccharin, sucralose, and sugar. (See graphs 1 and 2)

At 2 minutes chew time (maximum intensity)

Sweet: All six samples had reached their peak intensity in terms of perceived sweetness. All of the samples were judged to be similar in sweetness intensity at this point with the exception of the 47.5% sugar sample. This gum was judged to be less sweet than all others. At 1:00 chew time, when the sugar sweetened gum reached its peak sweetness, it was slightly sweeter than the Ace-K, saccharin and sucralose gums.

Bitter: The least bitter samples, at 2 minutes, were the APM, NTM and sucralose sweetened gums. The most bitter sample was that sweetened with saccharin. It should be noted, however, that bitterness ratings for all six samples only ranged between 0.4 - 0.9 which is below a "trace" level on the 15 point scale.

Minty and Cool: For both minty flavor and cool mouthfeeling, the six gum samples were similar in intensity after two minutes of chewing. The intensity of both attributes peaked around 2-3 minutes chew time.

Between 2 and 20 minutes of chewing, the sweetness of the samples began to separate with the high intensity sweeteners becoming more sweet than the sugar sweetened gum. By 10 minutes there is clear distinction in the sweetness levels of the gum.

At 20 minutes chew time (end of chewing time)

Sweet: After 20 minutes of chewing the NTM sweetened gum was judged to be significantly sweeter than the other five test samples.

Bitter: The bitterness of all six samples was rated similarly at 20 minutes chew time and, while no formal statistical test was done to compare attribute intensities over time, the level of bitterness appears to be slightly higher at 20 minutes as compared to the initial chew times of 15-30 seconds.

Minty: The neotame sweetened gum was significantly more minty in flavor at 20 minutes chew time than all other test samples. The only other difference noted after 20 minutes was that the APM sweetened gum was slightly more minty than the gum containing sugar.

Cool: Cool mouthfeeling was similar among the six test samples at 20 minutes.

Sweetness Half-Life (see Table 1)

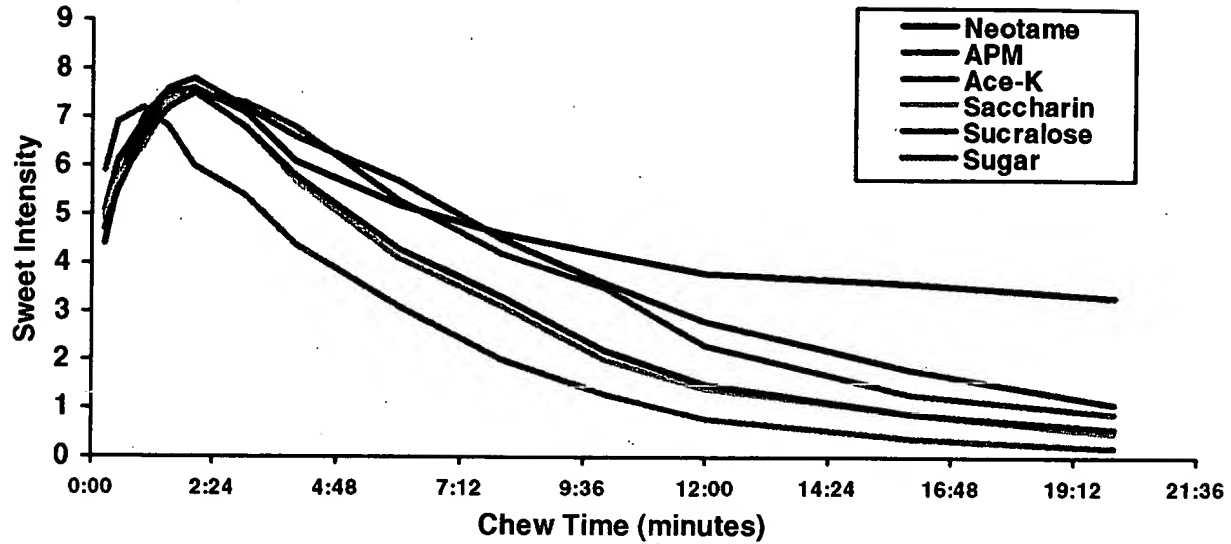
The sweetness ratings were plotted as a function of chew time and the sweetness half-life was calculated for each sample from 2:00 (peak sweetness). With a half-life of 14.9 minutes, the Neotame chewing gum sustains its sweetness significantly longer than all other sweeteners tested.

Next Steps: As a second part to this study, Neotame will be blended at a 50:50 sweetness equivalent ratio with each of the single sweeteners in this study. Data from the Neotame Binary Blend Study will then be compared to the single sweeteners to look for improvements in sweetness and minty flavor extension.

Attachments: Graph 1: Sweetness vs. Chew Time by Sample
Graph 2: Minty Flavor vs. Chew Time by Sample
Table 1: Sweetness Half-Life Sample Comparisons
Table 2: Summary of Attribute Mean Ratings by Chew Time

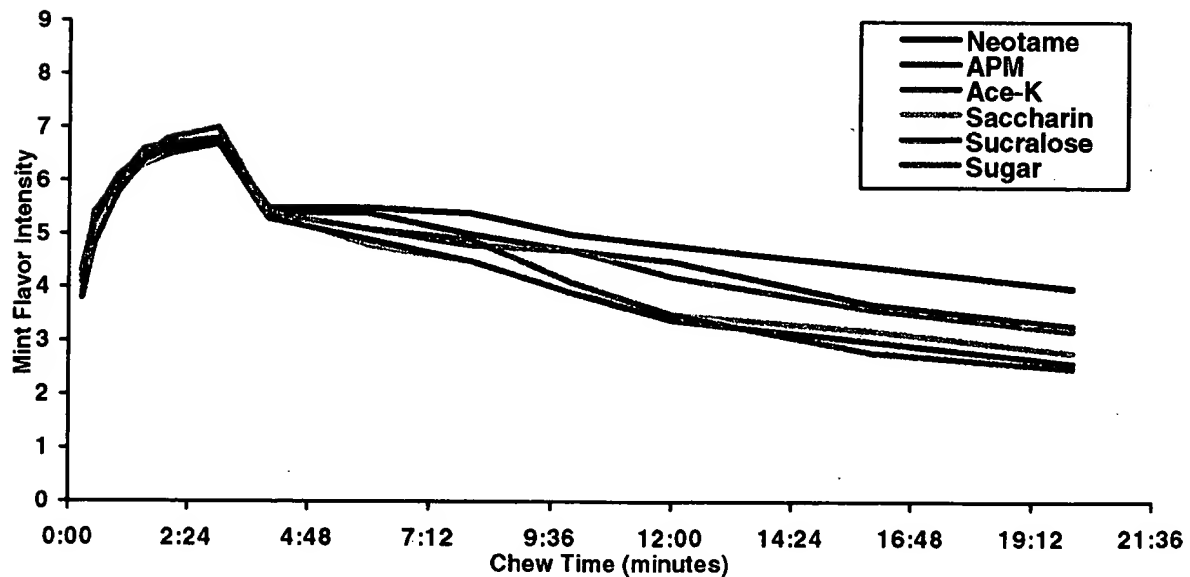
Graph 1

**Sweetness Over Chew Time
SS#3444**



Graph 2*

**Minty Flavor Over Time
SS#3444**



* There is a drop in mint scores at 4 minutes chew time because of the manner in which the data was collected. From 15 seconds through 3 minutes, the minty and cooling attributes were rated as one; from 4 minutes through 20 minutes, they were rated separately.

Table 1
Half-lives* *Post-peak* Sweetness

Sample	half life* (min)
100 ppm Neotame	14.9 D
3000 ppm APM	6.4 C
3200 ppm Ace-K	5.5 BC
1000 ppm Saccharin	4.5 AB
600 ppm Sucralose	4.5 AB
60% Sugar	3.5 A

* - incremental time from the peak sweetness needed to fall to half the maximum sweetness;
directly related to the descending rate of log sweetness

TABLE 2
NEOTAME IN CHEWING GUM
SUMMARY OF ATTRIBUTE MEAN RATINGS BY CHEW TIME
n=6,7 with 2 reps SS#3444(01-02) Test Dates: 10/26,28/99 and 11/2,3/99

	<u>100 ppm</u>	<u>3000 ppm</u>	<u>3200 ppm</u>	<u>1000 ppm</u>	<u>800 ppm</u>	<u>47.5%</u>
<u>Attribute</u>	<u>NTM</u>	<u>APM</u>	<u>Ace-K</u>	<u>Saccharin</u>	<u>Sucralose</u>	<u>Sugar</u>
Sweet 0:15	4.9 A	4.4 A	5.1 A	4.9 A	4.7 A	5.9 B
Sweet 0:30	6.1 A	5.6 A	6.1 A	5.7 A	5.5 A	6.9 B
Sweet 1:00	6.9 bc	7.0 bc	6.7 ab	6.4 a	6.6 ab	7.2 c
Sweet 1:30	7.5 ab	7.6 b	7.4 ab	7.3 ab	7.2 a	6.8 a
Sweet 2:00	7.6 B	7.8 B	7.5 B	7.5 B	7.5 B	6.0 A
Sweet 3:00	7.1 B	7.2 B	7.3 B	6.8 B	6.8 B	5.4 A
Sweet 4:00	6.1 BC	6.6 CD	6.8 D	5.7 B	5.8 B	4.4 A
Sweet 6:00	5.2 C	5.7 D	5.3 C	4.1 B	4.3 B	3.1 A
Sweet 8:00	4.6 C	4.5 C	4.2 C	3.1 B	3.3 B	2.0 A
Sweet 10:00	4.2 D	3.6 CD	3.5 C	2.0 B	2.2 B	1.3 A
Sweet 12:00	3.8 E	2.8 D	2.3 C	1.4 B	1.5 B	0.8 A
Sweet 16:00	3.6 D	1.8 C	1.3 B	0.9 B	0.9 B	0.4 A
Sweet 20:00	3.3 C	1.1 B	0.9 B	0.5 AB	0.6 AB	0.2 A
Bitter 0:15	0.2	0.1	0.1	0.3	0.2	0.1
Bitter 0:30	0.2	0.3	0.3	0.4	0.2	0.2
Bitter 1:00	0.4	0.3	0.5	0.5	0.5	0.3
Bitter 1:30	0.4	0.4	0.5	0.8	0.5	0.5
Bitter 2:00	0.5 AB	0.4 A	0.7 BC	0.9 C	0.5 AB	0.7 BC
Bitter 3:00	0.5	0.5	0.9	0.7	0.5	0.8
Bitter 4:00	0.6 A	0.6 A	0.9 C	0.6 AB	0.5 A	0.8 BC
Bitter 6:00	0.6 a	0.6 a	1.0 bc	0.6 a	0.8 ab	1.1 c
Bitter 8:00	0.7	0.6	0.9	0.7	0.9	0.9
Bitter 10:00	0.7	0.5	1.0	0.8	0.7	1.0
Bitter 12:00	0.5	0.7	0.6	0.8	0.5	0.9
Bitter 16:00	0.5 A	0.6 AB	0.7 C	0.7 BC	0.6 A	0.8 C
Bitter 20:00	0.5	0.6	0.7	0.7	0.5	0.9

Mean ratings are based on a 15-unit intensity scale where: 0=None and 15=Extreme.

Means sharing a common lower case letter do not differ significantly where $p < 0.10$.

Means sharing a common UPPER CASE letter do not differ significantly where $p < 0.05$.

TABLE 2 (cont'd.)

Attribute	<u>100 ppm</u> <u>NTM</u>	<u>3000 ppm</u> <u>APM</u>	<u>3200 ppm</u> <u>Ace-K</u>	<u>1000 ppm</u> <u>Saccharin</u>	<u>800 ppm</u> <u>Sucralose</u>	<u>47.5%</u> <u>Sugar</u>
Minty 0:15	4.3	3.8	4.2	4.1	3.8	4.1
Minty 0:30	5.3	5.4	5.3	5.0	4.8	5.2
Minty 1:00	6.1	6.0	5.9	5.9	5.8	6.0
Minty 1:30	6.5	6.6	6.3	6.3	6.4	6.5
Minty 2:00	6.7	6.7	6.5	6.6	6.6	6.8
Minty 3:00	6.8	6.7	6.7	6.7	6.7	7.0
Minty 4:00	5.5	5.4	5.4	5.4	5.3	5.4
Minty 6:00	5.5	5.4	5.1	4.8	4.9	5.1
Minty 8:00	5.4	5.0	4.8	4.5	4.5	4.9
Minty 10:00	5.0	4.7	4.7	3.9	3.9	4.1
Minty 12:00	4.8 b	4.5 b	4.2 ab	3.5 a	3.4 a	3.5 a
Minty 16:00	4.4 c	3.7 abc	3.6 abc	3.2 ab	3.0 ab	2.8 a
Minty 20:00	4.0 c	3.3 bc	3.2 ab	2.8 ab	2.6 ab	2.5 a
Cool 0:15	4.3	3.8	4.2	4.1	3.8	4.1
Cool 0:30	5.3	5.4	5.3	5.0	4.8	5.2
Cool 1:00	6.1	6.0	5.9	5.9	5.8	6.0
Cool 1:30	6.5	6.6	6.3	6.3	6.4	6.5
Cool 2:00	6.7	6.7	6.5	6.6	6.6	6.8
Cool 3:00	6.8	6.7	6.7	6.7	6.7	7.0
Cool 4:00	6.3	6.4	6.5	6.3	6.2	6.7
Cool 6:00	6.6	6.4	6.6	6.2	6.2	6.8
Cool 8:00	6.7	6.4	6.7	6.2	6.2	6.8
Cool 10:00	6.4	6.6	6.6	6.1	6.2	6.3
Cool 12:00	6.3	6.4	6.4	6.0	5.9	6.3
Cool 16:00	5.9	5.8	6.1	5.6	5.6	5.8
Cool 20:00	5.7	5.5	5.9	5.3	5.3	5.3

Mean ratings are based on a 15-unit intensity scale where: 0=None and 15=Extreme.

Means sharing a common lower case letter do not differ significantly where $p < 0.10$.

Means sharing a common UPPER CASE letter do not differ significantly where $p < 0.05$.